

WHAT IS CLAIMED IS:

1. A dichroic prism comprising a first right angle prism, a second right angle prism, a third right angle prism, and a fourth right angle prism, each having a first and second side faces substantially perpendicular to each other,

5 wherein the dichroic prism is a columnar body having a square shape in lateral cross section, the columnar body including: a first bonded face formed by bonding the first side face of the first right angle prism and the second side face of the second right angle prism; a second bonded face formed by bonding the first side face of the second right angle prism and the second side face of the third right angle prism; a third bonded face formed by bonding the first side face of the third right angle prism and the second side face of the fourth right angle prism; and a fourth bonded face by bonding the first side face of the fourth right angle prism and the second side face of the first right angle prism,

10 wherein the first bonded face and the third bonded face have dichroic films for first color light, which reflect the first color light and transmit therethrough second color light different in color from the first color light,

20 wherein the second bonded face and the fourth bonded face have dichroic films for the second color light, which reflect the second color light and transmit the first color light therethrough,

25 wherein the second bonded face and the fourth bonded

face are arranged on the same plane, and

wherein the third bonded face is deviated from the first bonded face by a predetermined distance.

5 2. The dichroic prism according to claim 1, wherein the distance is one, in which an image formed of the first color light having predetermined reference image information coincides with an image corresponding to the reference image information, the first color light being allowed to be incident onto the first and third bonded faces
10 and being reflected thereon.

3. The dichroic prism according to claim 1,
wherein the first color light is light having a first color constituting three primary colors of light,
the second color light is light having a second color
15 constituting the three primary colors of light, and
the dichroic film for the first color light and the dichroic film for the second color light can transmit therethrough a remaining third color constituting the three primary colors of light.

20 4. A dichroic prism manufacturing method, comprising:
a first step of preparing a first right angle prism, a second right angle prism, a third right angle prism, and a fourth right angle prism, each having first and second side faces substantially perpendicular to each other;
25 a second step of forming a dichroic film for first color light on the first side face of the first right angle

prism, the dichroic film for the first color light reflecting
the first color light and transmitting therethrough second
color light different in color from the first color light,
and forming a dichroic film for the second color light on
5 the second side face of the first angle prism, the dichroic
film for the second color light reflecting the second color
light and transmitting the first color light therethrough;

a third step of forming the dichroic film for the second
color light on the first side face of the second right angle
10 prism;

a fourth step of forming the dichroic film for the
first color light on the second side face of the fourth right
angle prism;

a fifth step of arranging the second side face of the
15 first right angle prism and the first side face of the second
right angle prism on the same plane, and of bonding the first
side face of the first right angle prism and the second side
face of the second right angle prism, thus manufacturing
a first bonded prism in which a first bonded face having
20 the dichroic film for the first color light is formed;

a sixth step of arranging the second side face of the
third right angle prism and the first side face of the fourth
right angle prism on the same plane, and of bonding the first
side face of the third right angle prism and the second side
25 face of the fourth right angle prism, thus manufacturing
a second bonded prism in which a third bonded face having

the dichroic film for the first color light is formed;

5 a seventh step of constituting a pre-dichroic prism by allowing a plane, which is formed of the second side face of the first right angle prism and the first side face of the second right angle prism in the first bonded prism, and a plane, which is formed of the second side face of the third right angle prism and the first side face of the fourth right angle prism in the second bonded prism, to face to each other and to contact each other;

10 an eighth step of adjusting a position of the second bonded prim with respect to the first bonded prism such that an image formed of the first color light having predetermined reference image information coincides with an image corresponding to the reference image information, the first color light being allowed to be incident onto the first and third bonded faces in the pre-dichroic prism and being reflected thereon, thus deviating the first bonded face and the third bonded face from each other; and

20 a ninth step of bonding the first bonded prism and the second bonded prism, thus forming the second bonded face and the fourth bonded face, each having the dichroic film for the second color light.

5. The dichroic prism manufacturing method according to claim 4, further comprising:

25 a tenth step of forming the dichroic film for the first color light on the first side face of the first right angle

prism, the tenth step replacing the second step and the third step;

an eleventh step of forming the dichroic film for the second color light on any one of the plane, which is formed of the second side face of the first right angle prism and the first side face of the second right angle prism in the first bonded prism, and the plane, which is formed of the second side face of the third right angle prism and the first side face of the fourth right angle prism in the second bonded prism, the eleventh step replacing the seventh step; and

a twelfth step of allowing the first bonded prism and the second bonded prism to contact each other with the dichroic film for the second color light interposed therebetween, thus constituting the pre-dichroic prism.

6. The dichroic prism manufacturing method according to claim 4, wherein an ultraviolet curable resin is used for bonding the first right angle prism and the second right angle prism, for bonding the third right angle prism and the fourth right angle prism, and for bonding the first bonded prism and the second bonded prism, the ultraviolet curable resin having the same refractive index as refractive indices of the first to fourth right angle prisms and being cured by being irradiated with ultraviolet rays.

7. The dichroic prism manufacturing method according to claim 4,

wherein the first color light is light having a first

color constituting three primary colors of light,

the second color light is light having a second color constituting the three primary colors of light, and

5 the dichroic film for the first color light and the dichroic film for the second color light can transmit therethrough a remaining third color constituting the three primary colors of light.

8. A dichroic prism manufacturing device used for performing the dichroic prism manufacturing method according to claim 4, comprising:

10 a holder having a holding portion which holds the first bonded prism;

a slide unit provided slidably on the holder, the slide unit being allowed to contact the second bonded prism arranged to constitute the pre-dichroic prism together with the first bonded prism held by the holder, and sliding the second bonded prism with respect to the first bonded prism;

15 a position adjustment unit for sliding the slide unit with respect to the holder, the position adjustment unit being attached to the slide unit;

20 a light source unit for making the light incident on the pre-dichroic prism held by the holding portion; and

an image display unit for displaying the image formed of the light from the light source unit, the light being made incident onto the pre-dichroic prism held on the holder and being reflected on the first bonded face and the third

bonded face.